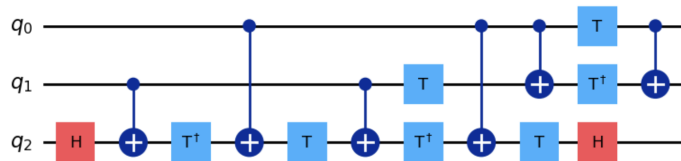# Assignment 2 Solutions

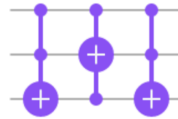Harsh Suthar

June 21, 2024

1 Quantum Gates

1.1 Problem 1

The Toffoli gate can be made by using 6 CNOT gates along with 9 single qubit gates as follows:

1.2 Problem 2

The Fredkin gate can be constructed with 3 Toffoli gates as follows:

1.3 Problem 3

A more optimised Fredkin gate can be constructed with the help of 1 Toffoli gate and 2 CNOT gates as follows: